721 Excitement and enthusiasm decline, and the group returns home.
But some are pushed until realized, [95] and can be very murderous.
726 The Nambikwara usually attack at dawn and extend their ambush by
dispersing throughout the bush. The signal for attack is given from
[534 202] place to place, thanks to the whistle which the Indians carry hanging
from their necks. This little whistle, composed of two bamboo tubes
[136] tied with cotton thread reproduces the cry of the cricket approximately,
and doubtless for that reason has the same name (kalõde) as this insect.

MAGIC, RITES AND RELIGIOUS BELIEFS

278 Some beliefs of a magical and religious character also play
[771] their role in social life. The most important is the notion of
nãnde (bl). To analyze it, we should first say a few words con-
cerning poisons. The Nambikwara are very expert poisoners. They
make curare for their arrows, or at least for some of them, pre-
[415] served in little earthen pots. (1) Without enlarging here upon the

1. The study of the Nambikwara curare was made, on the occasion of our expedition, by our friend and companion Dr. J. A. Vellard. Cf. Vellard, "A preparacão do curare pelos Nambikwaras," Revista do Archivo Municipal de São Paulo, LIX, 1939, p. 5-16; "Communication à l'Académie de Médicine de Paris," id. LVIII, 1931, p. 117-118.

manufacture of the curare, it must be noted that this preparation, although reserved for chiefs and sorcerers, is not surrounded by any ritual and does not give rise to any magical operation. The Indians make the curare publicly, applying recipes and taking precautions which are either essential to the effectiveness of the product or which constitute simple prejudices, but all of which have a positive character. Their attitude towards this poison thus may be considered as scientific. Along with curare, the Nambikwara know other poisons likewise of vegetable origin, and which take the form of powders
[415] contained in small tubes. These are made of quills, feathers, or stalks of bamboo or other wood, cleaned out and corked at both ends with a piece of vegetable pith or cotton, and at times decorated with red dots and lines made with urucu paste. (2) These tubes are

2. Cf. Rondonia. Roquette Pinto collected examples of these tubes and reproduced one of them (Rondonia,

278
[415]

p. 239 and Fig. 34), but seems not to know their usage nor the nature of their content.

usually tied in bundles of two or three or more, and thus all the Indians possess a provision of poison from which they rarely become separated. We were not able to find out anything concerning the preparation of these drugs, but it seems that different varieties exist, used either by men or women. Notably, the poisons whose small doses are contained in the feather quills would be [96] according to an informant, women's poisons, and also much more to be feared. The "tube poisons" (as compared with the arrow poison which is only employed for hunting, and never for war) play an important role in inter-individual relationships. They are the usual instrument for amorous or commercial vengeance. To define these poisons, there are special terms according to dialects. Thus the arrow poison has a special name: inãru (a1); dãdnesu (a2); tiĩre, nãnde (b1); ãĩrare (b2); iriŋã (c). But all of the arrow poisons and tube poisons are called by a more general term, belonging to dialect b1, but which is understood and used by all the groups: nãnde, which one might be wrongly tempted to translate as poison. It must be noted, however, from now on that in the case of tube poisons, the term nãnde means the tube and its contents simultaneously.

789 However besides these "true" poisons which we shall call scientific, there are other substances whose supposed action is of a purely magical character. Certain tubes contain, not a powder meant to be mixed with food, but fragments of resin of the tree called "barrigudo" or [824] "barrigudeira" in Portuguese (Bombax ventriculosa) and sahãrudĩtaãru (a1/2), irĩdare (b1), jakĩŋa (c) in Nambikwara. These fragments are used for certain "magic projections" which are carried out in the following way: a fragment of resin is placed between the lower edge of the palm of the left hand, held horizontally, and the tip of the index of the right hand held vertically (position called iuuehãre [a1]). By exercising strong pressure of the finger on the edge of the other hand, the index trips and throws the small projectile as far as several meters (asataãkedjuzu [a1], adãmdige [b1], ndãmdige [b2]). It is believed that the person reached by a fragment thrown in this way will become like the trunk of the barrigudo tree, narrow at the base and at the top and bloated in the center. He will fall ill, his stomach will begin to inflate, and finally he will die. This method of throwing is also often used for teasing, especially children, and to bombard an adversary with small fruit, with pieces of dirt,

787 These visions are attributed to the thunder which sends them to men under its semi-personal form amõ.

771 Thus the Nambikwara conceive of three types of supernatural
756 forces: first the power which is abstract, but placed in objects or substances, the nãnde; next the spirits acting in the form of supernatural or seminatural animals, atãsu or jaguar. Finally the thunder, with which under certain conditions, it is possible to entertain personal relations. Each individual can, in a certain measure, establish contact with these forces, however it is the shamans who have the specialized function of intermediary between the human group and the supernatural world. The information which we shall give on this point will be very summary, for it was impossible to obtain from our informants a coherent treatment of the question of shamanism. None of the groups encountered had a shaman with the exception of a single one (group c) where the powers of the chief and the sorcerer were found [102] concentrated in a single individual (C20). Our best informant, B1, chief of the allied group, was categorical concerning the fact that C20 combined the two qualities of ŋelikabala (chief, c) and of ndãre (thunder, c) although he was only ŋilikãde, temporal chief. The sorcerer would then be simultaneously the man who identifies himself with thunder, and who communicates with it in the personal form called amõ. Likewise, in the eastern groups (a1 restricted and enlarged, and a2), it was not possible to uncover the presence of a sorcerer or of an individual with such powers. This fact could be interpreted in three different ways: that the sorcerers were held apart; or that they dissimulated their nature; that the institution of the sorcerer is, in fact, absent in certain groups; or that, in these same groups, the functions of the sorcerer are exercised by the chief, and that, in inverse fashion to what is produced in group c, it is the spiritual functions which are in second place with regard to the temporal. It is this hypothesis which we consider the most reasonable. In group a1; A1 makes the arrow-poison and treats sick persons by suction, functions which in group c come within the province of C20 considered as shaman, rather than chief of the group.

756 Whatever the fact may be, and as we have just said, it is the sorcerer who makes the poisons, and it is he who proceeds to the magical treatment of the sick, clearly different from the positive
278 therapeutics likewise practiced. The Nambikwara are familiar with
757 quite a large number of medicinal plants and treat certain illnesses with their help. Thus they care for purulent ophthalmia by an

injection of pao preto (ikãtu nẽ̂ʂeram, a1), put in the eye with the aid of a funnel of leaves from whose lower extremity the liquid falls drop by drop. But other maladies, considered the result of poisoning (or of a charm; in both cases: nãnde) are exclusively within the domain of the sorcerer. He makes the "arrows of thunder" (ndaɑ̃rede, b1) in all points similar to those used for hunting except that their dimensions are much more restricted. The treatment consists of three operations: throwing the arrows around the sick person to carry away the spirits; sucking the body to force out the cause of the illness; this cause is thrown far away when it has been captured:

43. ãdige underãdige kadirɨ̃nka ũngeraige tenũndige (b1)
throw, throw far away the little thorns sucked with the mouth, throw away [the evil]. (1)

1. The informant made it known that by "little thorns" he meant to designate the "arrows of thunder" which are only several centimeters in length. One notes the same assimilation in other regions of South America. Thus, the informant of Karsten in the Chaco (R. Karsten, "Indian tribes of the Argentine and Bolivian Chaco," Societas Scientiarum Fennicae, Commentationes Humanorum Litterarum, IV, 1, p. 132-133) cites as the cause of the malady and the way of combatting it, an "arrow" or "splinter").

[103] Afterwards the sick person is usually cured and can take up his work again:

44. enẽndige deẽndige enẽnə deẽdnige (b1)
To be sick is finished [one can] continue.

However, the sorcerer can establish much closer relationships with the supernatural powers. During our stay in his group, C20 disappeared, or more exactly did not return to camp at the usual hour. The other men, having gone hunting, had not seen him the whole day. Night fell and toward nine or ten o'clock in the evening, the most profound consternation reigned in the camp and particularly around the fire of the man who had disappeared, whose two wives and child held themselves embraced while mourning in advance the death of their husband and father. At this moment we decided to look around, accompanied by a few Indians. We had only to walk 200 meters to discover C20, crouched on the ground and shivering in the darkness. He was completely naked, that is, divested of his

He was completely naked, that is, divested of his
756 necklaces, bracelets, earrings, and belt, and by the light of our
[301] electric lamps we could make out his tragic expression and his pale complexion. He let himself be helped to the camp without difficulty, where he sat down without a word and in a completely impressive attitude of dejection. Little by little, his story was drawn from him by an anxious listener. He explained that he had been carried off by the thunder (amõ), [a storm had broken the same day]; the thunder had carried him in the air to a point which he designated at a distance of 25 kilometers from the camp (Ananáz River), had divested him of all his ornaments, then brought him back the same way and left him in the place where we had discovered him exhausted. Everyone went to sleep commenting on the incident and the next morning, C20 had recovered not only his habitual good humor, but also all his ornaments, which amazed no one and for which he offered no explanation. But the following days a very different version of the event began to be peddled by the Tarundé. They said that, far from having entered into relationship with the other world, C20, under the cover of a magical disappearance, had gone to undertake
[578] some transactions with a band of Sabané Indians who were camping in the vicinity. These insinuations were never developed further, and the official version of the affair continued to be ostensibly admitted. However, in our personal relationships, B1 let his preoccupations be seen upon several occasions. As the two groups left us shortly after, we never found out the outcome of the story.

756 No information has been uncovered concerning the manner of
●278 naming the shaman as such. In the preparation of the arrow poison, C20 was assisted by his potential son-in-law C25.

* * * * * * *

622 [104] Besides his supernatural attributes, the chief, or shaman,
756 plays another role, that of "leader" in ceremonies and celebrations.
796 The Nambikwara have three types of ceremonies. Those which mark the critical moments of each one's existence, such as birth, initiation, puberty, marriage, death; the seasonal festivals; and finally, the ceremonies celebrated on exceptional occasions: war and hunting or scavenging expeditions. We have already alluded to the rites of war, and we shall speak farther on of the ceremonies of the first type. We shall limit ourselves here then to some brief observations concerning the others.

had been poisoned. An attack of reprisal was carefully prepared and took place, in the course of which A1 and A5 distinguished themselves. The six persons composing the mission were killed by beating or pierced with arrows, including a baby of two. Only one woman was found alive by an expedition sent to aid them from Cuiabá. The version which she gave of the events coincides exactly with that which we collected from the main protagonists of the other camp. 177 648 797 [726]

Poison was still to play a role in the life of A6, and this during our stay. We found ourselves visiting (August 1938) at the camp of a neighboring group (a2), and relationships became quickly strained between A6 and our hosts, undoubtedly over the question of women, so that he got the habit of coming to my camp to seek a more friendly atmosphere, at the same time that he shared my food. This fact was noticed, a delegation of four men came to find me one day, and in quite a menacing tone of voice told me to mix some poison (which they brought me along) in the next dish which I would offer to A6; they thought it advisable and indispensable to do away with him at once, for, they told me, he is "very wicked" (kakore) and "is worth nothing" (ajdotiene). I had the greatest difficulty in getting rid of my visitors without opposing them with a refusal which in turn would have exposed me to animosity which I had just learned it was better to avoid, and I considered my best plan of action to exaggerate my ignorance of the language, and to feign obstinate lack of comprehension. After several attempts, my visitors retired very disappointed. I warned A6 who immediately disappeared. I was to see him again only four months later. 278 578

These incidents are characteristic of Nambikwara psychology. The Nambikwara are very open, confident and spontaneous, but they are very sensitive and react with great violence to deception [125] or disappointment. Few primitives are as easily accessible. Few give as free access to their intimate lives, to their beliefs, daily acts, thoughts and sentiments. But despite this facility and cordiality, the visitor, be he an ethnographer or a member of a neighboring tribe—must constantly be on guard and watch his actions; for the slightest imprudence, the least clumsiness, may incite reactions difficult to evaluate among his hosts, and in connection with which recent events are always present to recall that they may be extreme. A6 offered a perfect example of this confidence and spontaneity, allied with brusk manifestations of violence and irritability. 157 648

Thus, the Nambikwara character alternately presents two aspects, or more exactly, testifies to a double nature: one which we shall call positive, and which goes much farther in this sense than among many Indians in contact for centuries with the whites; and the other, of metaphysical nature, whose rigor and exaltation at times evoke the mysticism of the North 157

2: Lévi-Strauss E-5 (1938-1939)1948
SP17 Nambicuara SP17

string (secondary release). Four types ot arrows are used: (1) featherless fishing arrow with three to five prongs; (2) bird arrow with a blunt point; (3) big-game arrow with a lanceolate bamboo point; and (4) poisoned arrow, used chiefly for hunting monkeys, with several barbs which are attached to the point with cotton wrapping and which break easily in the wound, being, therefore, usually protected by a bamboo sheath. The last three have a bamboo shaft and "Arara" feathering. Sewed feathering is known by the central and northern groups but seldom used. For warfare, big game arrows with serrated bamboo points are used.

Nambicuara arrow poison is a curare prepared by grating the root of a *Strychnos* shrub, and by infusing (*Eastern Nambicuara*) or boiling (*Central* and *Northern Nambicuara*) it until the water evaporates and leaves a thick brownish substance, which is smeared on a wax-coated arrow point. It can be preserved in tiny pots for several months. Among South American arrow poisons, it is remarkable because it is made of only one vegetable substance and is prepared openly—in some groups by the chief or shaman, in other groups by anyone—without magical practices or taboos. Its great toxic properties were studied by Vellard (1939 b).

Other poisons of unknown composition are used for amorous or political revenge. They are in the form of powders and are kept in tubes made of feather quills, bamboo, or other woods, each ornamented with paintings and cotton or bark wrappings.

Clubs are carved in the shape of a flattened or cylindrical pointed spade; the handle is often adorned with black and white plaiting of philodendron bark and bamboo strips. Their purpose is mostly ceremonial.

SOCIAL AND POLITICAL ORGANIZATION

Kinship terms identify parallel-cousins with siblings, and cross-cousins with potential or actual spouses. Cross-uncles and cross-aunts are called by the same terms as parents-in-law and grandparents; parallel-uncles and parallel-aunts are equated with parents. Similarly, parallel-nephews and parallel-nieces are classed with children, and cross-nephews and cross-nieces with children-in-law. Marriage is between cross-cousins or between the maternal uncle and his niece. Monogamy is the rule, but polygyny is the privilege of the chief and other important men. Polygyny is usually with several sisters (sororal) or with a woman and her daughters by a former union. The first wife runs the household, subsequent wives being assistants to the husband. The deficiency of available women which results from polygyny is compensated by homosexuality between adolescent male cross-cousins (Lévi-Strauss, 1943 a).

The village is ruled by a chief, but each of the nomadic bands into which it splits during the dry season is led by a secondary chief. Chief-

3: Lévi-Strauss E-5 (1938-1939) 1944
SP17 Nambicuara SP17

of skill and initiative are the prerequisites of a good leader. It is he who makes the arrow-poison, although the preparation of *curare* among the Nambikuara is a purely profane activity surrounded by no ceremonial taboos or magic prescriptions. It is he, also, who makes the rubber ball used in the head-ball games which are played occasionally. The chief must be a good singer and dancer, a merrymaker always ready to cheer up the band and to brighten the dullness of daily life. This could easily lead to shamanism; and, in some cases, I have met with chiefs who were at the same time healers and trance addicts. Mystical life, however, is kept in the background among the Nambikuara, and, wherever they exist, magical functions are only secondary attributes of the leader. More often chieftainship and sorcery are divided between two different individuals. In this respect, there is a strong difference between the Nambikuara and their northwestern neighbors the Tupi-Kawahib among whom the chief is, first of all, a shaman, usually a psychotic addicted to dreams, visions, trances and impersonations.

But although they are oriented in a more positive direction, the Nambikuara chief's skill and ingenuity are none the less amazing. He must have a perfect knowledge of the territories haunted by his and other groups, be familiar with the hunting grounds, the location of fruit-bearing trees and the time of their ripening, have some idea of the itineraries followed by other bands, whether hostile or friendly. Therefore, he must travel more, and more quickly, than his people, have a good memory, and sometimes gamble his prestige on hazardous contacts with foreign and dangerous people. He is constantly engaged in some task of reconnoitering and exploring, and seems to flutter around his band rather than lead it.

Except for one or two men without actual power, but eager to cooperate and to receive occasional rewards, the passivity of the band makes a strong contrast with its dynamic leader. It seems as if the band, having relinquished certain advantages to the chief, were in exchange relying entirely upon him for its interests and safety. I received a particularly striking demonstration of this under rather strange circumstances. After several weeks' discussion, I had obtained from a chief the favor of taking me, together with a few companions and some animals loaded with presents, to the semi-permanent dwellings of his band which were uninhabited at that time. This was a chance for me to penetrate more deeply into the unexplored Nambikuara territory

224 to me not to say anything. Later that day he
264 returned to the spot, built a fire, roasted the snake, and ate it by himself.

224 Caymans are hunted by first finding their hide-outs under logs or overhanging banks. When one is found under an overhanging bank the hunters peel a number of slender poles and begin to thrust them down through the bank to force the cayman out. Men are stationed above and below the spot, and as the cayman comes out he is shot. When he hides under logs the hunters feel for him with their feet. The hunters are so nimble that few of them get bitten. The large rodent, paca, is also hunted in this way, for it hides in holes under overhanging banks.

The large water snake, anaconda, is hunted in pools where it lies in wait for game. When the hunters have trailed an anaconda to a water hole they keep shooting arrows into the water until they strike it. The first strike then indicates where the snake is, and they continue shooting until the snake weakens and can be pulled out. Sometimes the snake grabs a hunter by the arm, but the others are there to assist if anyone gets into difficulties.

Small anteaters are dug out of holes but the larger kind which does not go into holes is hunted by two men armed with clubs. The men chase it, one on each side, and as the anteater turns on one he strikes it on the nose with his club and then jumps into a tree. The other hunter then strikes it. This continues until the anteater dies.

Monkeys are chased from tree to tree until they tire and come down to hide in a hole in the ground. Dogs can then overtake the monkey or he can be shot or dug out of the hole. Deer usually do not fall when shot, but the hunter chases the wounded deer until he can shoot more arrows into it, especially into the legs.

[278
184] Although the Western Nambicuara are said to use arrows poisoned with curare, the Wakítisu say they do not use curare but that they know how to prepare it and that they formerly used it in raids. As arrows do not penetrate bone, the hunter tries to shoot at an angle so that the arrow will enter the chest cavity, or he will aim between the neck and the shoulder bone.

223 The Nambicuara hunt and eat all birds except the urubú. Large rheas are not hunted because it is difficult to approach them on the open sa-

baked manioc and other food which they have been preparing. When the messenger leaves with the food it is a sign that the men will return to camp after sunset.

Before the men arrive the women wash the girl and paint her with a mixture which includes latex from the rubber tree. A series of dots are painted on her face, breasts, abdomen, and thighs (pl. 6, *c* and *d*). When the men come in they dance in front of the girl's hut. She then comes out and is given a name and everyone tries to give her a necklace or some other object. During the night men and women join in the dance, holding hands and dancing in a circle, the dance steps being stamped out with the right foot in the direction in which the circle is moving. A special puberty song is also sung.

The Nambicuara tell of a strange medicine known only to the shamans which is given to girls during the puberty ceremony. It is a blue liquid which, when taken internally, stops menstrual bleeding for the remainder of the girl's life. The Wakĺtisu claim that they do not use it but that the other Eastern Nambicuara band do. The missionaries informed me that the Kitánrhu use this medicine, and the missionaries seemed to think that it was effective.

MARRIAGE

There is no special marriage ceremony, for when young people go through the puberty rites they are ready for marriage and a mate is selected for them by their parents. The young man, who is to become the husband of a girl just out of seclusion, goes to her parents and helps his future father-in-law build a small hut, and when it is finished the young man tells the girl to come out hunting with him. She takes a burden basket and they go off into the woods. In the afternoon the man builds a fire and tells the girl to prepare some food and honey. After the food has been eaten he tells the girl to come and lie beside him near the fire. She is supposed to resist and he takes a stick and threatens her. He then has sexual intercourse with her, and when they come back to camp that night they are accepted as a married couple. When wives are acquired by inheriting the widow of a brother or by abduction from other bands, no ceremony is held.

INDIAN TRIBES OF NORTHERN MATO GROSSO, BRAZIL—OBERG

WILD PLANTS USED IN MANUFACTURE—Continued

137
824

Portuguese name	English name	Scientific name	Nambicuara name
Ibiva		*Syagrus speciosa*	Dugnídgaisu.
Taquara para ponta de flecha	Bamboo for arrowheads		Kayésu.
Taquara para flauta secreta	Bamboo for sacred flute		Ka'd'inensu.
Taquara para pangipe	Bamboo for panpipe		Wasingaisu.
Tucum		*Astrocaryum lucumo*	Halé'isu.

PLANTS USED FOR DRUGS AND POISON

278

Timbó		*Paullinia pinnata*	Kônatu.

PLANTS USED IN VARIOUS ECONOMIC WAYS

137
824

Limão			Kalínsu.
Embira			Sa'hlu.

MAGICAL PLANTS

[889]

Purutudo			Inhéukôdôsu.

ANIMALS HUNTED FOR FOOD[1]

136
262
825

Anta	Tapir	*Tapirus terrestris*	Aldnsu.
Arirauha	Otter	*Pteronura brasiliensis*	Dîwisu.
Bugio		*Alouatta ursina*	Ihru.
Caitetú	Pecary	*Tayassu pecari*	Y'ákisu.
Camondongo	Mouse	*Mus musculus*	Sduhlu.
Capivara	Capybara	*Hydrochoerus hydrochoeris*	O'nsu.
Coatí	Coati	*Nasua narica*	Kalsu.
Cutia	Rodent	*Dasyprocta aguti*	Dûhru.
Cutiá		*Ateles ater*	Hónadasu.
Cuxio		*Ateles paniscus*	Kalínsu.
Jaguatirica		*Felis pardalis chibiguara*	Ianarâwídnsu.
Lontra	Otter	*Lutra paranensis*	Kwantnâisu.
Macaco-prego	Monkey	*Cebus apella*	Hôtsu.
Onca parda	Brown panther	*Felis concolor*	Ianarânenensu.
Onca pintada	Jaguar	*Felis onca*	Ianarâtasu.
Ouriço		*Coendou prehensilis*	Hoiodtasu.
Paca		*Cuniculus paca*	Ûlutsu.
Porco do mato			Y'ákadesu.
Preguiça		*Bradypus tridactylus*	Aldisu.
Rato de chapadão		*Scaptromys gnambiquarae*	Nôtasu.
Sagui-pinanga		*Midas rosalia*	Takisu.
Tamanduá-bandeira		*Myrmecophaga jubata*	Dûkisu.
Tamanduá-mirim		*Cyclopes didactylus*	Wdinsu.
Tatú-bola	Armadillo	*Tolypeutes tricinctus*	Nûnsu.
Tatú-canastra		*Priodontes giganteus*	Wahrûru.
Tatú-encoubo			Sunaisu.
Tatú-liso			A'hru.
Tatú-15-quilos			A'ldtasu.
Veado campeiro (a)	Deer		Yetâhru.
Veado campeiro (b)	do		Whidiru.
Veado mateiro		*Mazama rufa*	Kuíkilsu.

[1] Other rare or unidentified are also eaten.

[p. 125]

164 These papery scales cannot be removed easily; I noticed that they did not come off when the woman scratched herself. I believe that the itching is much less severe at this time; it seemed more intense during the initial stages.

I cannot be definite about the time span of the disease. The symptoms evolve in a few days from the first to the second stage, but the latter seems quite prolonged.

[183] Some of the scabs contain incipient papery scales. However, as I had the opportunity to see only one woman and one girl, her daughter, whose bodies were entirely covered with the lesions of the last stage, I believe that the disease does not always reach this point. It may remain stationary at the second stage, or it may recede [involuir].

For the time being, therefore, I ascribe three stages to the disease:

(a) the cyst stage
(b) the scab stage
(c) the scale stage

I believe that these correspond to evolutionary phases of the same disease, and not to different diseases, because I found transitional forms on some of the affected individuals.

Besides, [the Indians] indicated by means of very clear signs that the final symptoms began with the cyst stage, the only one found in nursing children.

[757] The Indians spread saliva on the scabs; we do not know yet [278] whether they use any herb against the disease. They probably do, for veritable herbariums were found in their villages.

302 751 Another question that remains to be solved is the possible effect on the disease of the Indians' custom of painting their body with a greasy paste made from the juice of the urucu seeds. (1)

[113]

1. Alvaro Osorio de Almeida (in the Boletim do Museu Nacional, Vol. 7, 1931, No. 1) studies the reactions of skin painted with urucu to the actinic rays of light and to solar heat. His experiments led him to the following conclusions:

"Once smeared with urucu, the

824 It is a curious fact that palm cabbage (palmito) is not utilized by the Serra do Norte Indians. Gabriel Soares [234] made it clear in 1587 that the aborigines of the coast prized the leaf buds of the palm tree: "Stupendous palm cabbages, five or six spans in length and as thick as a man's leg, are extracted from the buds of these palms."

273 Pineapple wine was a common beverage, for Soares goes on to say: "The nature of this fruit is hot and humid, and it is very harmful [278] to those with open wounds or sores; the same pineapples, when green [757] are good for curing sores, for their juice eats away all the rotten and putrid flesh, and the aborigines know this; in such wise does this fruit [296] eat away, that they use its rind to wipe off the rust from their swords and knives and to remove the stains from the clothes they wash; when ripe, the juice is used by the Indians to make a wine which inebriates them; to this end they pluck the fruit not quite ripe, on account of its being more sour..."

263 The Indians of the Serra do Norte found our salted food unpleasant. They often refused the plates we set before them, giving us to understand that it was the salty flavor which led them to behave in this manner.

262 Milk (condensed milk) was also rejected in the beginning; they would make a face and say that it was human milk and therefore repulsive: [235] "Anungçú!"

261 One must know the Indians' gluttony, their insatiable hunger, their continual, unfailing, artless, persistent animus devorandi, fully to comprehend the disgust which led them to such a renunciation.

262 The children are given to eat of everything; no matter what 855 goes into an Indian's mouth, there is always a crumb for the little one who walks beside him or rests in his arms.

276 Even the stimulants they use--tobacco, for instance--are shared 855 with the children. More than once I had the opportunity to observe Indians giving cigarettes to children under two. (1)

[113]

1. Cf. E. Roquette-Pinto, "A condição da criança entre os Indios do Brasil [The Status of the Child Among the Indians of Brazil," Primeiro Congresso Americano da Criança [First American Congress on Childhood] (Tucumán, 1916).

241 [Plates p. 254]

[249] Yet a wild form of manioc has been found (Manihot utilissimo, Pohl); if not the very species we use, at least one of the same genus. But maize?

Where on the surface of the earth does maize exist in a wild state except for the tunicated Zea mais which is sometimes considered to be the ancestor of the modern species?

What unveiling of mysteries, if this question were to be answered!

Some Tagnani who were watching the herdsman João Lucas weed a small plot in Três Buritis began to laugh at him, indicating that it would be better to root up the weeds; the hoe severed the stems but left in the roots, and the plants would grow up again. When the Nambicuara weed, they pull out everything that is not useful. Their plots are always clean.

Their tobacco is the Nicotiana that grows wild in their mountains; it may not properly be said that urucu and cotton are cultivated: they are planted and utilized. Some large beans of various kinds de-
278 241 serve mention. [250] They are to be found in the Indians' baskets along with many other plants; but we never saw an Indian eating them or making any use of them. Pending further research, I am of the opinion that they are saved for medicinal undertakings carried out in secret by old men and women. The same may be said of the castor oil plant (Ricinus communis), which is definitely adventitious.

[Fig. 39]

415 The spools of cotton fiber that await spinning and the seeds saved for future use are kept out of the weather, dust and rain in bags made of straw or pacova leaves.

[Fig. 40]

759 It seemed to us that medicine was not exercised by any special segment of society. They all take part in the treatment of certain diseases; in serious cases, an experienced elder takes over.

752 Wounds are dressed with straw fibers [coated] with certain resins (jatobá). Burns are treated with cold water. Fractures and dislocations are reduced haphazardly.

4/1 4) Chaco; 5) Eastern Brazilian.]

171 Nambicuara bows must be placed in the second group on account of their cross-section, which is indeed quite similar to that of Mundurucu bows. Their twine is coiled in the manner of Meyer's Perutypus group.

[Plates p. 248]

[271] [Fig. 58] Meyer classifies Brazilian arrows into seven groups, now insufficient because other types have since been found, but which nevertheless cover the principal characteristics of our arrows. His classification is based on the feathering of the shaft. [1) Eastern Brazilian or Tupian-Ge; 2) Guiana; 3) Xingu; 4) Arara; 5) Maue; 6) Peruvian with fibers; 7) Peruvian with resin, where Nambicuara arrows belong.] This last group is further divided in two: a northern division covering the Amazon Valley, and a southern division covering the Chaco region. The feathers are slit lengthwise, their stem scraped until only the outer layer remains; [272] they are tied spirally to the shaft by means of twine and black resin.

[Fig. 55]

4/1 Our collection includes war, hunting and fishing arrows. It must be noted, however, that these distinctions are not always maintained; when necessary, the Indians use all three types interchangeably.

Aniêçú: The tip is of red wood, cylindrical, smooth; used to hunt monkeys.

[Fig. 56]

Uaeliçú: The tip is sharp, made of taquaruçu bamboo (Merostachys sp.); used in war and to hunt large game--capybara, tapir, jaguar. . . . .

Aieuinçú: The tip is smooth, with a barb at the end.

[Fig. 57]

4/1 [273] Anikirikatçú: A unique type, armed with a series of
278 barbs secured with twine and pitch. It is coated with a black substance which the Indians believe to be poisonous; for this reason, they protect the tip with a bamboo sheath. It is a war weapon. The "poison" of Nambicuara arrows is harmless... (1)

1. [Alvaro Osorio de Almeida notes here that he carried out an

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experiment with the resinous, supposedly poisonous substance found on the tip of one of these arrows. He injected a concentrated solution of it into frogs and guinea pigs, and the only resulting symptoms were muscular twitchings, unsteady gait, and some salivation.]

[Fig. 60]

411 Aieracú: The tip is blunt; it is used to stun birds that are to be caught alive or free from blood, which stains the feathers. [See fig. ... (59), p.55A] Often a smooth tip wrapped in a straw pellet is used for the same purpose.

[207] [274] Some unique fishing arrows have a double, triple or quadruple tip and a bone barb. [See fig. ... (37), p. 36B.] Some have feathers at the base, others do not. . . . .

All Serra do Norte arrows have shafts made of thin bamboo. The various parts of the weapon are secured with strips of the strong [209] imbé lianas (Philodendron imbe, Mart.).

[Fig. 61] The clubs are extremely crude weapons of attack and defense, mere portions of thick branches cut when the occasion demands it.

[324] [275] The axes of chipped stone are uniform in type. They are wedge-shaped, made of diorite, and they average two kilograms in weight. The handle is a piece of creeper stem, perhaps from a Bauhinia. The pitch and cord used to fasten the stone make the tool surprisingly strong. . . . .

381 The pitch is made of mastic resin, jatai (Hymenea stigonocarpa [324] or H. stilbocarpa), and wax, as well as other unknown substances. It is placed in pots and subjected to the action of fire, then kept in pellets fastened to embira strips or in loaves wrapped in leaves. Both the arrow "poison" and the axe pitch are called by the name of dukutaarú, which means "wax."

[Fig. 62]

7:Roquette-Pinto--56A E-4, 5 (no date)1938 SP17 Nambicuara SP17
(ca. 1912)

411
273

Fig. 60. Poisoned arrow (anukiritatçũ) with protective sheath.

226 Tephrosia toxicaria is a poisonous legume, a kind of tingui
824 [Lupinus cascavella] used in fishing.
278 They are not familiar with the fishhook, and use [276: full page of figures] [277] a sort of fish trap made with bamboo or with the stem of the titara liana (Desmoncus sp.).
262 The following foodstuffs are represented in the collection.
--Guaiatú: white maize.
--Urinodzu: manioc dough, which under microscopic examination proved to be very rich in starch grains. The root, once grated,
252 [115] is pressed [by wringing] with a straw cord, the çaaru. (1) The grater

1. [Heloisa Alberto Torres notes that the cylindrical tube used to press manioc by some Amazonian tribes must have spread from the Guianas to the valley of the Amazon. Métraux considers the woven band used for the same purpose and found on the periphery of the tube territory a more primitive form. The simple straw cord of the Nambicuara would thus constitute an even more primitive variant.]

is of the type used by the Xingu Indians (Suya, etc.). It consists of a board with about two [twenty?] rows of small sticks.
[Fig. 17]
262 --The larvae of a butterfly, which they eat alive.
--Katunuzú: anthill clay, which they also eat.

. . . . . .

[824] --A mushroom, orelha de pau (Polyporus sp.), which is eaten, and beans (Phaseolus sp.) of unusual aspect were also found in one village. [278] The smoked [moqueada] head of a great anteater was
[251] found in a basket by Miranda Ribeiro during the 1909 expedition.
415 Mortars (nutêzê) are hollowed out by means of fire and used to
252 pound meat and other foods.

372 They make fire with mastic resin sticks, the tips of which are wrapped in straw to protect them from the rain.

[Fig. 63]

241 415 Their plots are worked with pointed sticks. The seeds of urucu, gourd plants (Lagenaria) and cotton are kept in leaf containers.

278 824 Medicinal fruit (Solanum mammosum) is also saved, as well as roots, leaves, etc.

[Fig. 31]

386 The collection contains two samples of dyes: a paste of urucu and fat, sweetly scented, which the women use to paint their body after the bath (huduhukaidi); and a variety of red ocher. [279]

248 Cotton (1) is represented by seeds (rim de boi variety) in leaf

[17]

1. According to the studies of Fa. Schmidt and Nordenskjöld (concerning hammocks), cotton reached Brazil from the Andes and was cultivated mostly by the Tupian Indians in the midst of the Amazon jungle. It is used less extensively among the Arawakan Indians. This distribution, due in part to the needs of the plant, explains its presence among the Nambicuara, who are located at the extreme west of the plateau. (R. L.)

[283 236] containers; cotton thread (kondzú) from a spindle (gdaretatú); skeins [855] of spun cotton; cotton fabric (sareguêzê--strap used to carry children).

[283] The spindle is made of a palm splinter imbedded in a round potsherd.

[Fig. 64]

415 924 Kateçú are fruits of the Lagenaria genus used as containers and storage vessels. Some hold crudely chopped tobacco and are stoppled with a corn cob, a method frequently used by the frontiersmen.

[See fig. ...(28) p. 308.]

/211/

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278 Numerous travelers and physiologists have concerned themselves with curare without succeeding in exactly determining its nature and its method of preparation. For some curare is purely vegetable; for others it appears to be composed largely of animal materials. Without analyzing here all the literature on this subject, it will be enough to recall that most former authors and travelers of the past century name diverse species of Strychnos as the principal base of curare; many other plants belonging to various families have also been mentioned as possibly entering in this poison. The partisans of an animal or mixed origin for curare, practically all travelers, assert that the venoms of snakes, batrachians, and arachnids, and fish and insect extracts, etc... play an essential role in its preparation. Despite numerous opinions to the contrary the presence at least of certain venoms in some curares (1) is indisputable.

[113]

1. Vellard and Assis, "Études immunologiques sur le curare /Immunological Studies on Curare/," Annales de l'Institut Pasteur. Paris, LII, 102, 1934.

Often these controversies on the composition of curare have lost sight of one essential fact. Curare is not a set substance and does not correspond to one single formula. There is not one but a number of curares, more or less complex, peculiar to each region, each tribe, and in many cases to each preparer.

Besides it is the general but false practice to call every paralyzing arrow poison of South America curare. The application of this term should be limited, in accordance with its classical physiological definition, to any poison suppressing the passage of excitations of the nerve to the muscle while preserving direct excitability of the muscle and that of the motor nerve.

/211 cont./

114 True curares are becoming difficult to find. Many of the
278 modern products brought back as curares or existing under this name in /212/ trade are paralyzing poisons of variable toxicity but with a weak or no curarizing effect. The curarizing effect itself does not interest the Indian; he is only looking for a halting poison producing rapid paralysis with loosening of muscular tonus, no matter by what mechanism, for his arrows. Often also the good faith of travelers has been betrayed and the Indians, anxious about their secret, have given them false recipes or poisons different from true curare. Lastly, some curares are hard to preserve, making it impossible to ascertain their properties upon the return of expeditions.

These causes, so diverse, have always left doubt about the exact composition and method of preparation of curare.

I. Curare of the Ñambikwara /Nambicuara/

During my last trip to the central plateau of the Mato Grosso with my colleague Lévi-Strauss, I was present at the preparation of a very simple but active curare by the Ñambikwara and accompanied these Indians on the search for the necessary plants.

Curare had not been mentioned as existing among the Ñambikwara. The Rondon Commission had certainly observed the existence of an arrow poison among them, but later investigations carried out on arrows sent to Rio de Janeiro had given negative results (Alvaro Ozorio de Almeida and Roquette Pinto). The cause of this failure can only be attributed to the material used in the experiments, which was too old; the arrows keep their activity only a few weeks.

278 The composition of curare is the same for all the
184 Ñambikwara, but its method of preparation varies from group to group. It must be emphasized that the preparation of this poison is surrounded with more mystery as one goes toward the

/212 cont./

278 184 southern boundary of the territory of these Indians toward the Amazon. Among the most remote Ñambikwara, those on the right bank of the Rio Juruena whose material culture is extremely poor and who do not have a sorcerer, all the men know how to prepare curare. Among the Tagnani living in the region of Campos Novos and the Rio October 12 and the Çabanè living between the campos of Vilhena and the Rio Commémoration, the preparation of curare is reserved either for the chief or more often for the sorcerer (Çabanè). The Tamandé of the Roosevelt River have refused to give any precise information on curare, the preparation of which is the exclusive prerogative of the sorcerer; their arrow poison, which I was able to study, is identical to that of the other groups. The Ñambikwara of the Cabixi River also use curare, but I did not obtain /213/ any details about its preparation from these Indians, who visited our camp but spent only one evening there.

278 126 I was present at the preparation of curare for the first time among the Ñambikwara of the right bank of the Rio Juruena.

[114] Among the objects gathered for our collections were several poisoned arrows. The first experiments carried out on various animals either with the arrows or with the wash-water of the points revealed a symptomatology recalling that of curare.

[116] [117] Our two chief informants, who were called José Maria and Julio by the civilized people, were influential personages in the group and the principal authors of the massacre of the North American, Protestant mission of the Juruena in 1930.

[123] Patient negotiations led them to show me the plant used by them, and then a little later, to let me be present at the preparation of the poison itself.

Not without fear of being hoaxed, I tested the prepared product: its action was identical in every respect to that of the arrow poisons. The Ñambikwara had been honest.

[114] [162] Two months later in the campos of Vilhena the Çabanè sorcerer, who belonged to the mixed group composed of the

/213 cont./
278 126 [114] [162]
last Çabanè-Tagnani survivors, again showed me the complete preparation of curare. All the information gathered in the various Ñambikwara groups visited agrees with what I was able to observe.

In possession of these facts I prepared several times a certain quantity of curare identical to that of the Ñambikwara. The action of these different samples was tested in the field in order to be used in comparison with later experiments upon the return of the mission; thus any possibility of error due to a possible alteration of these products was eliminated.

A year has gone by since this time, and the various solutions brought back have kept their activity; they made it possible to examine rigorously their curarizing properties.

Preparation of Curare

278 824 Plant. Ñambikwara curare is prepared with only one plant, a Strychnos which grows in the sandy brushwood of the central plateau of the Mato Grosso. Although not rare this species is not abundant anywhere.

It is a bush two meters high (Pl. III, A), with a rather strong stem and downward-hanging branches, more or less sarmentous and sometimes changing into tendrils at the ends; I never saw a really twining example of this species. The branches have a reddish bark, /214/ without thorns, which is covered, as is the stem, with white concretions. The leaves are elongated and small or medium in size. The species is very polymorphous. No specimen bore flowers or fruit.

The Strychnos group is one of the most difficult to study. Many species rarely flower, and in the absence of flowers it is often impossible to identify them.

In certain features the species of the Ñambikwara is comparable to St. medeola. It exists in the plant collection of the Rondon Commission, but also without flowers and undetermined.

/214 cont./

278 824 Only the bark of the roots impregnated with a reddish, gummy juice is used in the preparation of curare. The plants which grow in sandy places are considered to be richer in poison; they are recognized by the bright red color and moisture exuding from incisions made in the bark. Roots from clayey earth are dry and considered incapable of giving an active product.

The Ñambikwara of the Juruena consider it essential to gather the roots in the morning at dawn before the sun gets too hot, and they only use fresh bark. The Çabanè use dried, stored bark by preference.

Çabanè Curare

278 The preparation of Çabanè curare may be taken as typical. It comprises three main operations: draining of the bark in portions with fresh water; rapid boiling to rid the product of some of its impurities; slow concentration at low heat.

[412] Immediately after their harvest the roots are washed and then scraped with a splinter of bamboo or a piece of iron to detach the bark. Small, very fine shavings are thereby obtained which are dried and kept in baskets or gourds.

[413] Draining of the bark. The bark is placed in a small, elongated basket (kọnọsimatá) of bamboo lamellae reinforced by large leaves (kọnọkọnọsi) and hung by two vertical supports over an earthen dish. Over the bark they pour 200 to 250 cubic centimeters of cold water; a blood-red liquid filters off slowly. The filtering takes 15 to 20 minutes; when it is almost over fresh water is again poured over the bark. This operation is repeated six to eight times until the bark is exhausted (Pl. IV, A-B).

[412] Boiling on a brisk fire. After each operation the liquid obtained is poured into a receptacle placed directly over a strong fire; it is constantly /215/ stirred with a wooden spatula and does not take long to boil in large bubbles. When it

/215 cont./

278 threatens to overflow it is removed from the fire for a second and then put back to boil. A thick, reddish scum forms which [412] holds the largest impurities; it is removed as it appears with a straw from a palm tree (Pl. V, A). After five to ten minutes on an average the boiling diminishes; the liquid turns brown and begins to thicken. It is then taken from the fire and [415] poured with the aid of a funnel (kǫ̈li) made from a rolled leaf into a new receptacle to be concentrated (Pl. IV, C).

[415] [172] Concentration. The concentration is done in a receptacle (here, a tin can from the mission) suspended 40 or 50 centimeters above a small fire, into which successive portions of liquid are added as they are prepared. The concentration takes two to three hours. According to its degree /of concentration/ they obtain a thick blackish-brown liquid, reddish when looked through, ready to be applied to the arrows with a straw, or a black paste which becomes very hard on cooling and can be kept for a long time. Before being used this paste must be softened at low heat.

The Çabanè recommend that one not touch the curare with the fingers nor even breathe the steam from it during the boiling. This hypothetical toxicity of the steam had already been noted by former travelers; it was even asserted that these emanations were so dangerous that the Indians had the curare prepared by old women who almost always succumbed to it. One can see (Pl. V, A) that the Çabanè sorcerer is not afraid of it.

Curare does not enter healthy skin, and the Ñambikwara of the Juruena press the water-soaked bark between their hands, taking the sole precaution of washing immediately afterward. The steam that I voluntarily inhaled never caused me the least sickness.

[192] The Çabanè call curare and the plant which produces it iríwa, and the still unconcentrated liquid from soaking iriwiya. The Tagnani name the plant and the curare naⁿdé.

/215 cont./

278 Curare of the Ñambikwara of the Rio Juruena

The technique of the Ñambikwara of the right bank of the Rio Juruena is more primitive.

They use only bark which has just been gathered. The draining off of the bark is done only once and with warm water: the bark /216/ is put on the fire in a rather large amount of cold water, and the operation is ended when the temperature reaches 37° to 40° /centigrade/. It is filtered quickly by squeezing the bark with the hands to extract all the liquid from it. Then comes rapid boiling over a high fire and skimming. After several minutes of a rolling boil the fire is lowered and the liquid kept at a temperature a little below boiling until it has a pasty consistency.

[415] [237] The curare is kept in paste form in bamboo tubes or changed into a very hard mass by the addition of meliponine beeswax.

This method exposes the curare to strong heat for at least two hours. The Çabanè method reduces this time to ten minutes, the other operations being carried out at low heat. Both produce curares with about the same activity.

[192] [411] The Rio Juruena Ñambikwara call curare and the plant a'utĭsú or a'ukisú; the roots ta'ãdisú; the poisoned arrow aurũ kiritkatsú, and its protective bamboo sheath aşirikatsú.

Utilization of Curare

278 411 The Ñambikwara are not familiar with the blowgun. They use curare to poison large arrows with long, notched points, capped with a protective bamboo sheath. The points of the Tamandé curare arrows are shorter and more slender than those of the other Ñambikwara. They are usually placed in twos, threes, and fours under a single protective sheath.

According to the Indians an arrow's activeness does not last more than three or four months. The curare in paste form is kept for a longer time (close to a year). Hard curare can be kept for years.

/216 cont./

224 The poisoned arrows are intended for hunting certain ani-
278 mals, some large birds, cervids, and especially monkeys.
411 Birds wounded by one of these arrows fall almost immediate-
[203] ly.

A monkey mortally wounded with an ordinary arrow or even a bullet often remains hanging from the branches. Under the action of curare it holds itself immobile at first, then begins to tremble and falls several minutes later (five to 10 at the most) as soon as paralysis is produced.

A peccary or small deer such as the Cervus campestris wounded in the body runs for one or two minutes, then stops exhausted, is attacked by tremors and lies down.

The tapir, very large, resists a long time; it can run for two hours before stopping; hence the Indians do not hunt it with curare.

[262] /217/ The meat of animals killed with curare may be
[263] eaten without harm; the Ñambikwara of the Juruena content themselves with cutting away the flesh around the wound impregnated with poison and colored yellow; the Çabanè do not even take this precaution.

278 Poisoned arrows are also used for war; this is perhaps their
411 principal object among many Ñambikwara groups, who possess
726 only a very few specimens during normal times.

None of the Indians know of an efficacious antidote. According to our informants wounds in the trunk would always be fatal to men. By immediately drawing out the arrow, it might be possible to survive a wound in a limb; in order to make their extraction more difficult, the points of the poisoned arrows, especially those of the Çabanè, are very lightly attached to their shafts.

/217 cont./

Properties of Nambikwara Curare

●278 The toxicity of Nambikwara curare is high. Among mammals and birds it provokes an initial sensation of unlocalized irritation accompanied by cramps; the animals are restless and scratch themselves sometimes on one part of the body and sometimes on another. Then tremors appear, at first localized in certain groups of muscles, and then becoming general; in some cases they appear in the form of sudden, intermittent muscular jerks; at a more advanced stage certain muscles begin to fibrillate. Finally paralysis appears; the animal presents a progressive asthenia; it becomes immobile, avoids all movement; soon its paws give way, it sinks down, and the paralysis becomes complete.

The swallowing muscles and those of the larynx are reached very early in the dog; its voice becomes faint, its tongue hangs out of its mouth, saliva is no longer swallowed. The tendinuous reflexes disappear first, followed by the ocular reflexes. At the beginning breathing is accelerated, panting; the respiratory movements slow down very rapidly, diminishing in extent; periods of apnea appear, varying for dogs from ten to 50 seconds, and coming closer and closer together. After breathing definitely stops the heart continues to beat for several more minutes. Autopsy has revealed only ordinary lesions of suffocation and a greater or less extended yellow coloration of the muscles at the points of injection.

Claude Bernard's experiment, using a frog, one foot of which was isolated from the general circulatory system by a ligature cutting off the sciatic /nerve/ shows that after an injection of curare into the dorsal lymphatic sack /218/ the mobility of the isolated foot and retention of nerve excitability are preserved.

The curarizing action has been studied in a more precise fashion with solutions brought back with the help of ordinary

/218 cont./

278 inductive apparatus and with the usual equipment for the study of chronaxie at the laboratory of M. Miguel Ozorio de Almeida at the Institute Oswaldo Cruz of Rio de Janiero.

It is known that the South American pseudo-frogs are curarized with difficulty and in an incomplete fashion; toads in contrast the Bufo marinus among others, constitute choice reagents.

After 15 minutes the Bufo marinus (30 to 40 gr.) present perfect curarization, with doses from 0.01 to 0.05 cc. of liquid curare injected into the ventral lymphatic sack: the gastrocnemii no longer react to excitation of the sciatic /nerve/ by the discharge of condensers of five microfarads, nor even to that of a six-volt battery, while keeping their direct excitability.

Lizards are very sensitive; 0.001 to 0.01 cc. curarize Anolis or Tropidurus of average size.

An intramuscular injection of 0.2 cc. paralyzes a hen in two minutes and kills it in 15 to 20 minutes; 0.05 cc. produces a paralysis which only disappears after four or five hours.

Mammals are particularly sensitive to this curare.

A dog of eight kg., having had the end of an arrow point (45 mm.) in his thigh muscles for 15 minutes, immediately after being wounded had tremors localized at first in his forequarters, then they extended to his dorsal muscles. Three minutes later the animal fell; paralysis was complete after 12 minutes; pupillary reflexes disappeared in 15 minutes, the time when the arrow point was extracted; the definite stoppage of respiration occurred in 41 minutes, and the heart stopped three minutes later.

A ten-kg. dog who had received an intramuscular injection of 0.25 cc. of solution in its thigh displayed immediate restlessness and generalized irritation; in three minutes tremors began in the forequarters. The animal staggered (4"), then fell paws outspread (5"). Paralysis of the voice in six minutes and

N 278 /218 cont./ panting respiration; eight minutes, repeated muscular jerks in the forequarters; nine minutes, total paralysis, disappearance of the pupillary and corneal reflexes, tongue hanging out of the mouth; ten minutes, the first periods of apnea; 13 minutes, definite cessation of breathing; 15 minutes, heart stops.

There is no point in further stressing here the physiological action of the arrow poison of the Ñambikwara. These few observations suffice to /219/ show that we are dealing with a genuine curare and not with a simple paralyzing poison. Compared with a former curare, in a jar labeled "Indios tapuios du haut Rio Negro /Tapuio Indians of the upper Rio Negro/" Ñambikwara curare has shown itself considerably more active. It distinguishes itself from the classic curare of the Ticuana by the muscular tremors which it produces at the beginning of the poisoning among all the mammals studied.

II. Curare of the Pareci

P 278 P [192] The Pareci Indians, not very numerous and very civilized today, were acquainted with curare. They give it, with almost the same accentuation, the same name as the Çabanê: iriwâ.

P [124] [126] I was not able to obtain any as the Pareci no longer prepare it; the information on it was given to me by some middle-aged Pareci, who had spent their youth in some villages which were still independent at this time where the men used this poison.

The chief ingredient was the Strychnos used by the Ñambikwara, but accompanied by other plants which my informants did not know or did not want to bother gathering. One of the botanists from the Rondon Commission, Hoehne, cities six species of different, not completely identified plants, which were pointed out to them by a Pareci Indian as entering into the composition of their arrow poison. But this poison did not keep and could not be studied.

/220 cont./

278 171 [177] The Tamandé Ñambikwara, of the upper course of the Roosevelt River, assured me that curare had come to them from other Indians living farther to the north, in the region of the Gy Paraná /Gi-Paraná River/; it was not possible to make them specify what kind of Indians these were.

The Cabixiano /Cabishi?/ of the Rio Mequem, to the northeast of Ñambikwara territory, also use curare. According to a civilized Indian of this group encountered at the post of Baron de Melgaço, their product with a complex vegetable base is prepared secretly and only by a few old men; it is a hard curare in a jar. It is used for hunting, even of tapirs, and for war.

The Pareci, along with the Ñambikwara, represent the extreme southern point of the spread of curare, the use of which as one goes toward the Amazon becomes more and more frequent and its preparation surrounded with more mystery.

278 137 All the curares are not as simple as the Ñambikwara curare, but all appear to have as their principal base a species of Strychnos which varies according to the region. Certain Strychnos such as St. toxifera Benth., Str. lethalis Barb. Rod., and especially St. crevauxhiana Baill, are particularly toxic; others like St. pseudo-quina are very low in poisonous elements.

278 Besides the Strychnos, active elements of curare, of numerous other plants generally poisonous but with very diverse properties, and of animal substances such as venoms, often enter into the composition of this poison. Their addition answers different ends.

Sometimes these are resins or gums whose sole utility is to harden the product and to assure its preservation.

Sometimes they are toxic substances destined to reinforce or to complete the action of the Strychnos.

/221/ In other cases other substances without any actual effect but with magical properties are added to curare. Their nature is infinitely variable.

/221 cont./

●278 In many cases also the complexity of the curare seems to have no other end than to mask the real active elements and to assure the monopoly of its preparation by a few individuals.

We have thus led to divide curares into:

simple curares, with a base solely of Strychnos.

composite curares, in which diverse vegetable or animal elements are added to the Strychnos with the end: a) of hardening the product, b) of reinforcing its physiological action, c) with magical aims, and d) to conceal its real composition.

The Ñambikwara curare represents the most simple type.

Beyond its ethnographic aspect the knowledge of the exact composition of this curare interests physiologists; it will make it henceforth easy to prepare a very active curare with a constant action for research laboratories.

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●278
[291]
576

[492]
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Plate III

A

B

C

D

/See captions on next page./

8:Vellard--15 D, E-5 (1938) 1939 SP17 Nambicuara SP17

8:Vellard--15a D,E-5 (1938) 1939 SP17 Nambicuara SP17

Plate III

●278 Preparation of curare by the Nhambikwara Indians
(right bank of the Juruena)

A. Stalk of Strychnos sp., the root of which is used to prepare curare.

[115] B. The Nhambikwara Julio digging up a root of iriwa (Strychnos sp.)

C. The Nhambikwara Julio carries back some roots of Strychnos sp.

D. Root of Strychnos sp.

8:Vellard--16 D, E-5 (1938) 1939 SP17 Nambicuara SP17

Çahanè

Plate IV

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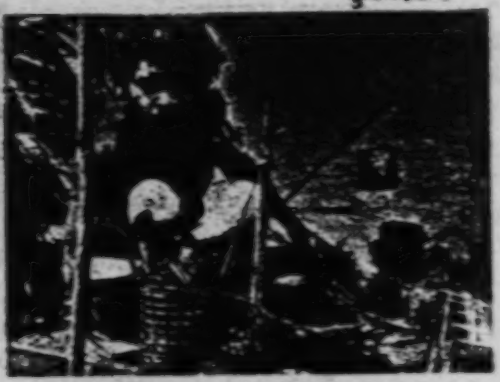
142
415
302
516



A

B

278
415
516

C

Preparation of Çabanè curare (Vilhena region)

A-B. Draining of the bark with cold water.

C. After boiling the liquid is tramferred into another receptacle where it will be concentrated at low heat.

Plate V

A

B

C

D

/See captions on next page./

8:Vellard--17 D.E-5 (1938) 1939 SP17 Nambicuara SP17

8:Vellard--17a D, E-5 (1938) 1939 SP17 Nambicuara SP17
Çabanè

Plate V

278 Preparation of Çabanè curare (Vilhena region)

A. The curare is skimmed during the boiling.

[412] B. Testing of the degree of concentration of the product with the aid of a straw.

[415 824] C. Funnel made of a leaf rolled into a horn and the leaf used to make it.

[415 323] D. A pot of grey clay, badly baked, used to prepare and keep curare (Nhambikwara of the Cabixi River).